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Superfund Chemical Data Matrix - Data Manager User's Guide

(Read-Only Version)

Office of Emergency and Remedial Response
U.S. Environmental Protection Agency
Washington, DC 20460

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Acronyms

AALAC	Ambient Aquatic Life Advisory Concentrations
AWQC	Ambient Water Quality Criteria
BCF	Bioconcentration Factor
CAS	Chemical Abstracts Service
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CPI	Characters per Inch
CPU	Central Processing Unit
FR	Federal Register
HRS	Hazard Ranking System
ID	Identifier
KB	Kilobytes
MB	Megabytes
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
NAAQS	National Ambient Air Quality Standards
NESHAPS	National Emission Standards for Hazardous Air Pollutants
NPL	National Priorities List
PREscore	Preliminary Ranking Evaluation Score
RAM	Random Access Memory
SARA	Superfund Amendments and Reauthorization Act of 1986
SCDM	Superfund Chemical Data Matrix
SCDM-DM	Superfund Chemical Data Matrix-Data Manager
UMTRCA	Uranium Mill Tailings Radiation Control Act
VGA	Video Graphics Array

PREFACE

The Superfund Chemical Data Matrix-Data Manager (SCDM-DM) Read-Only Version is a single-user program designed to produce printed tables of selected data, Hazard Ranking System (HRS) factor values, and benchmarks for contaminants commonly found at sites evaluated using the HRS.

The *SCDM-DM User's Guide (Read-Only Version)* explains how to operate SCDM-DM. It should be consulted by anyone who uses SCDM-DM. The read-only version is not intended to allow the user to alter the data used by the SCDM-DM. The user is able to view and print reports on the source tables, chemical tables, unit conversions, references, data selection hierarchy, and synonyms.

For further information, refer to the *Superfund Chemical Data Matrix* report (EPA/540/R-96/028) that accompanies the software. Users may also contact the PREscore/SCDM Helpline at (703) 902-4060 or call EPA's Office of Emergency and Remedial Response at (703) 603-8856.

SECTION 1

INTRODUCTION

The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) as amended addresses actual or potential releases of hazardous substances into the environment from uncontrolled hazardous waste sites. Section 105(8)(A)[1] requires the development of "criteria for determining priorities among releases and threatened releases throughout the United States for the purpose of taking remedial action ...." The U.S. Environmental Protection Agency (EPA), on behalf of the President, developed the Uncontrolled Hazardous Waste Site Ranking System in response to this requirement (47 *FR* 31190, July 16, 1982). The Hazard Ranking System (HRS) is a mathematical evaluation system used to determine the relative risk posed by a hazardous waste site based on factors reflecting the likelihood of a hazardous release, the characteristics of materials at a site, and the plants and animals likely to be affected by the release. Approximately 1,300 sites have been placed on the EPA's National Priorities List (NPL) using this HRS.

The Superfund Amendments and Reauthorization Act of 1986 (SARA) required EPA to revise the HRS to better reflect the relative threat posed by a site. The revised HRS was promulgated in 1990 (55 *FR* 51532, December 14, 1990) and includes additional factors to reflect the physical and chemical parameters of hazardous substances. The revised HRS contains more sophisticated mechanisms for assessing toxicity and persistence in the environment, substance mobility, potential for bioaccumulation, and the introduction of environment- and health-based benchmarks.[2]

The Superfund Chemical Data Matrix (SCDM) is a database containing HRS factor values and benchmark values for 422 hazardous substances commonly found at sites evaluated using the HRS.[3] Additionally, the database includes physical, chemical, and radiological data used to calculate HRS factor values (see the *Superfund Chemical Data Matrix* report for further information). The HRS assigns extra weight to factor values for sites where people and sensitive environments are exposed to hazardous substances at or above the benchmark values.

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[1] Alternatively cited as Section 105(a)(8)(A) of CERCLA as amended by SARA.

[2] Benchmarks are regulatory dosage or concentration limits developed by or used in other agency programs.

[3] SCDM contains 375 nonradioactive substances and 47 radionuclides.

1.1 SYSTEM OVERVIEW

SCDM-DM incorporates data from 28 sources, or references. SCDM-DM uses data from these sources to calculate HRS factor values and benchmarks to calculate an HRS score for a hazardous waste site. An independent software package (PREscore) imports these values.

The read-only version of SCDM-DM performs two primary functions: view **SCDM Tables** and generate **Reports**. These functions are available on the menu bar of the main screen (see Figure 1). SCDM data tables can be viewed under the **SCDM Tables** menu (see Section 3). Options under the **Reports** menu allow various forms of the factor value, benchmark, and source data tables to be printed or saved to a file. The **Quit** option is also located on the menu bar of the main screen.

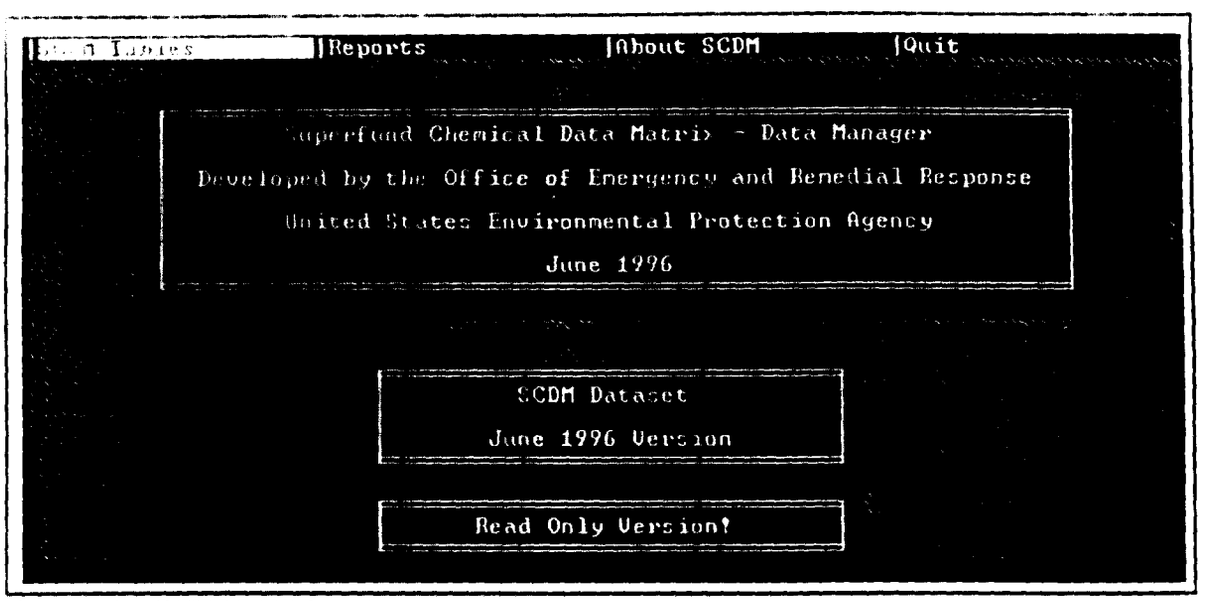

Figure 1. SCDM-DM main screen.

1.2 HARDWARE REQUIREMENTS

The minimum recommended computer configuration is an IBM-compatible PC with a 25 MHz 80386SX CPU, 640 KB RAM, a color monitor, one 1.44 MB floppy drive and DOS 3.3 or higher. SCDM will require approximately 10 MB of free space on the hard disk. A math co-processor is not required. Although SCDM-DM will run on a minimally configured computer, it is not recommended; the user may find that it is too slow.

For better performance, it is recommended that this configuration be upgraded to at least the following: a 33 MHz 80486 CPU, 4 MB RAM, a VGA color monitor, a hard disk with average access time of 12 milliseconds, and a disk cache in extended memory.

Additionally, a Hewlett-Packard LaserJet II printer, or another printer that emulates the Hewlett-Packard LaserJet II, is required. The printer must be equipped to produce these two mono-spaced fonts: (1) Courier (12 point, 10 characters per inch, or cpi) and (2) Line Printer (8.5 point, 16.66 cpi).

SECTION 2

USING SCDM-DM

2.1 INSTALLING SCDM-DM

The read-only version of SCDM-DM is available for installation from either 1.44 MB floppy disks or through Internet access using a Web viewer.

2.1.1 Installing from a Floppy Disk

SCDM-DM is installed from the 1.44 MB floppy drive to the hard disk. For the following instructions, it is assumed that the floppy drive is A: and the hard disk is C:. Substitute the correct drive letters if your configuration is different. Press <Enter> at the end of each typed command.

Making Backups of Distribution Diskettes

Before installing SCDM-DM, a copy of the original diskette should be made for safekeeping. For each diskette, do the following:

- Label a new diskette to match the original diskette being copied
- Place the diskette in drive A:
- At the DOS prompt, type:

```
DISKCOPY A: A:
```

The user will be prompted to swap the new and original diskette during this process. Follow the prompts on the screen. If help is needed, refer to the diskcopy command in your DOS manual. When the diskette has been copied, store the original diskette in a safe place.

Copying SCDM to a Hard Disk

The hard disk must have at least 10 MB of free space. The installation diskette contains a self-extracting file that automatically transfers to your new SCDM directory all system files, including databases and indexes. To install SCDM onto the hard disk, perform the following steps:

- Create a directory C:\SCDM on your hard drive
- Insert the installation disk into drive A:

- At the DOS prompt, type the following:

  CD \SCDM <ENTER>
  COPY A:\RO-SCDM.EXE <ENTER>
  RO-SCDM <ENTER>.

After installation on the hard drive, SCDM-DM is ready for use. If any of the files become corrupted, type "**RO-SCDM**" when in the SCDM directory and follow the utility commands for reinstalling one or more of the program's system files.

2.1.2 Installing from the Internet

The SCDM-DM program can also be downloaded and installed on your hard disk from the Internet via EPA's website (**www.epa.gov**) under the heading "**Programs**". The software is located within the "**Superfund Information**" homepage under the category "**Products**". To access the software, select "**Site Assessment: PREscore and the Superfund Chemical Data Matrix**".

The SCDM-DM runs on Windows or DOS platforms and has been packaged in a self-extracting archive called RO-SCDM.EXE. Before downloading the SCDM-DM, create a directory C:\SCDM on your hard drive. Then download RO-SCDM.EXE into the directory that you have created and perform the following steps:

- For Windows installation, from the File Manager, double-click on the **C:\SCDM\RO-SCDM** archive. The archive will expand into usable files.

- For DOS Installation, from within the SCDM directory containing the archive, type **RO-SCDM.EXE**. The archive will expand into usable files.

At this point, the SCDM-DM is ready to use. If any of the files become corrupted, type "**RO-SCDM**" when in the SCDM directory and follow the utility commands for reinstalling one or more of the program's system files.

2.2 STARTING SCDM-DM

To start the SCDM-DM program, do the following:

- Check the CONFIG.SYS file to verify that Files = 99.
- If a change to the CONFIG.SYS file is made, reboot the computer by pressing **<Ctrl>**, **<Alt>**, and **<Del>** at the same time.

- At the DOS prompt, type the following:

  C: <ENTER>
  CD \SCDM <ENTER>
  SCDM_RO <ENTER>

After the above commands are entered, a box appears on the screen that displays the name of the current version of the SCDM database and an older version (see Figure 2). SCDM-DM is designed to compare factor values and benchmarks contained in the current version with the previous version of the SCDM database. The default version names (June 1996 and June 1994) will appear in the fields.

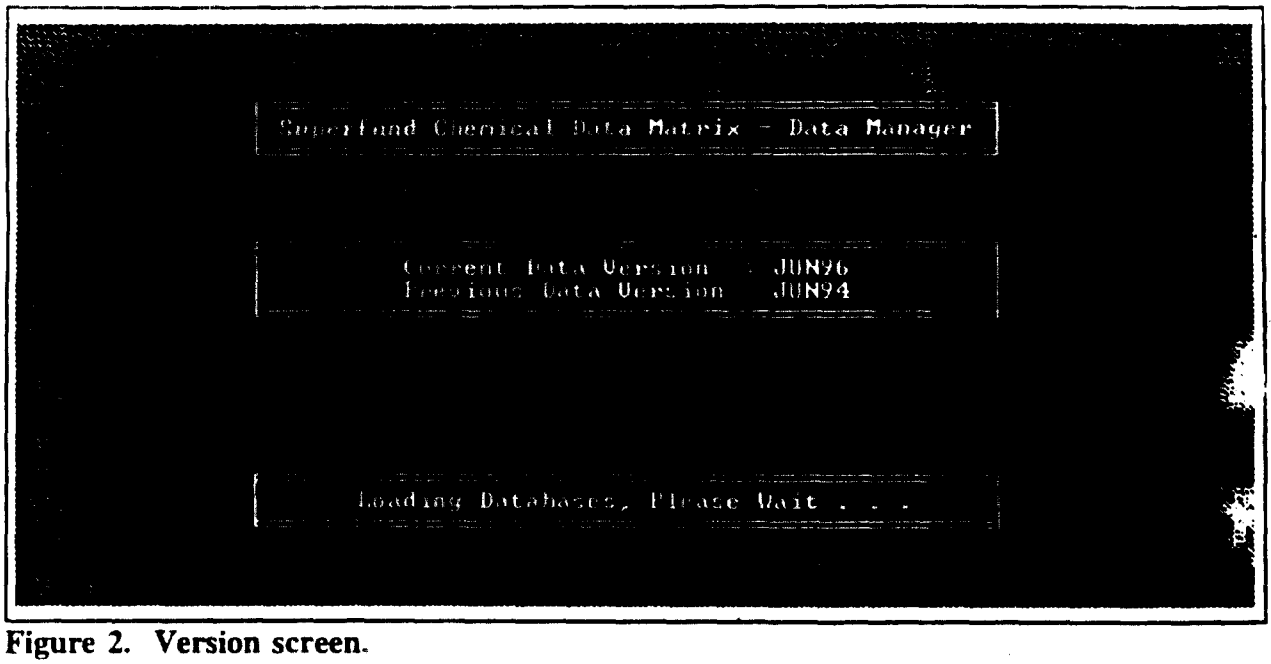

Figure 2. Version screen.

2.3 OPERATING SCDM-DM SCREENS

"Screens" in SCDM-DM are menus, scrolling pick-lists, or view screens. The term *screen* may refer to the entire screen or to a portion of the screen. The following sections discuss general features of these screens.

2.3.1 Menus

SCDM-DM uses a 'pull-down' menu system. The top menu bar in the SCDM main screen (see Figure 1) contains options for the two major functions of SCDM-DM (Read-Only Version): view **SCDM Tables** and generate **Reports**.

The menus associated with these functions can be revealed by one of two methods: use the <←> or <→> keys to highlight the desired function and press <Enter>, or type the first letter of the function name (see Figure 3). A menu option can be selected either by using the <↑> or <↓> keys to highlight the desired option and pressing <Enter>, or by typing the highlighted letter in the name of the menu option. Selecting menu options may cause another level of menu options to appear. Use the <Esc> key to exit a menu and move back up the hierarchy of pull-down menus.

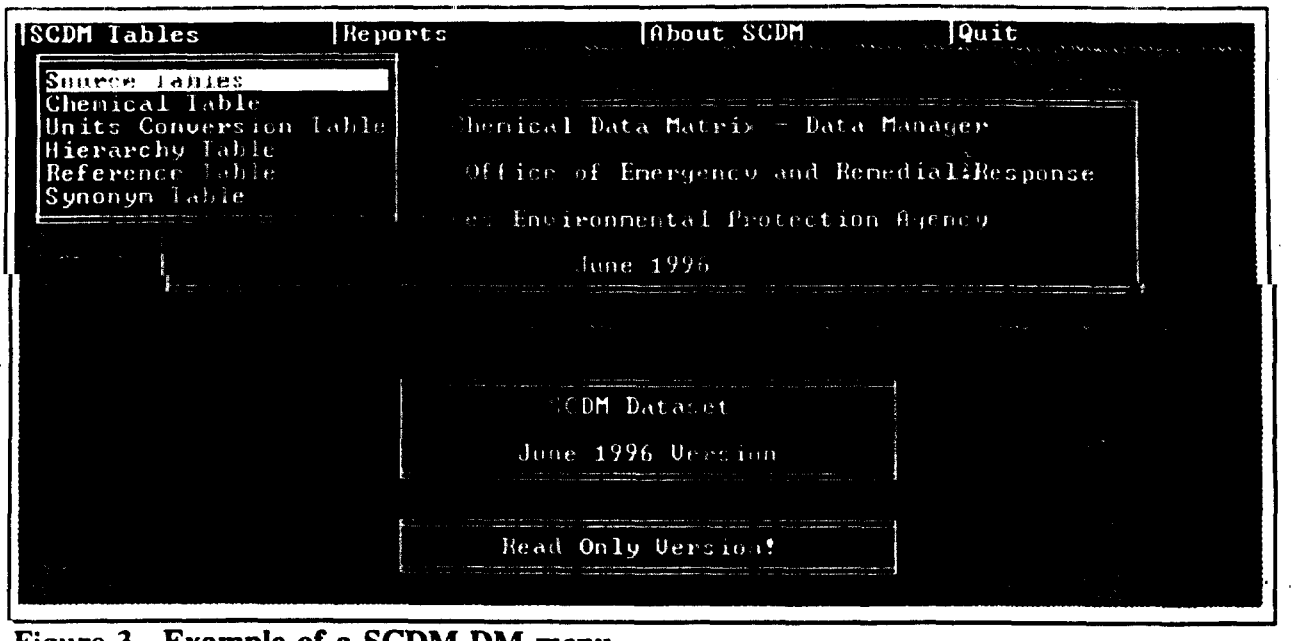

Figure 3. Example of a SCDM-DM menu.

2.3.2 Scrolling Pick-Lists

Whenever it is necessary to select an item from a list, SCDM-DM provides a scrolling pick-list (see Figure 4). The specific scrolling pick-list illustrated in Figure 5 can be displayed by choosing **Source Tables** under the **SCDM Tables** menu. Use the cursor-control keys, <↑>, <↓>, <PgUp>, <PgDn>, <Home>, and <End>, to move the highlight bar through a scrolling pick-list. The <↑> and <↓> keys move the highlight bar to the previous and next item in the list, respectively. <PgUp> and <PgDn> move the highlight bar a full screen at a time. <Home> and

<End> are used to move to the beginning and end of a list, respecti . Pressing a character key moves the highlight bar to the first item in the list that begins with that letter. For example, "MCL " can be found quickly in the list by pressing the letter "m," rather than by using the <↓> key to scroll through the entire list. If there is no item in the list that begins with the letter pressed, the highlight bar will move to the item that begins with the letter that alphabetically follows the letter that is pressed. Once the desired element in the list has been highlighted, select it by pressing the <Enter> key. To exit from the scrolling pick-list, press <Esc>.

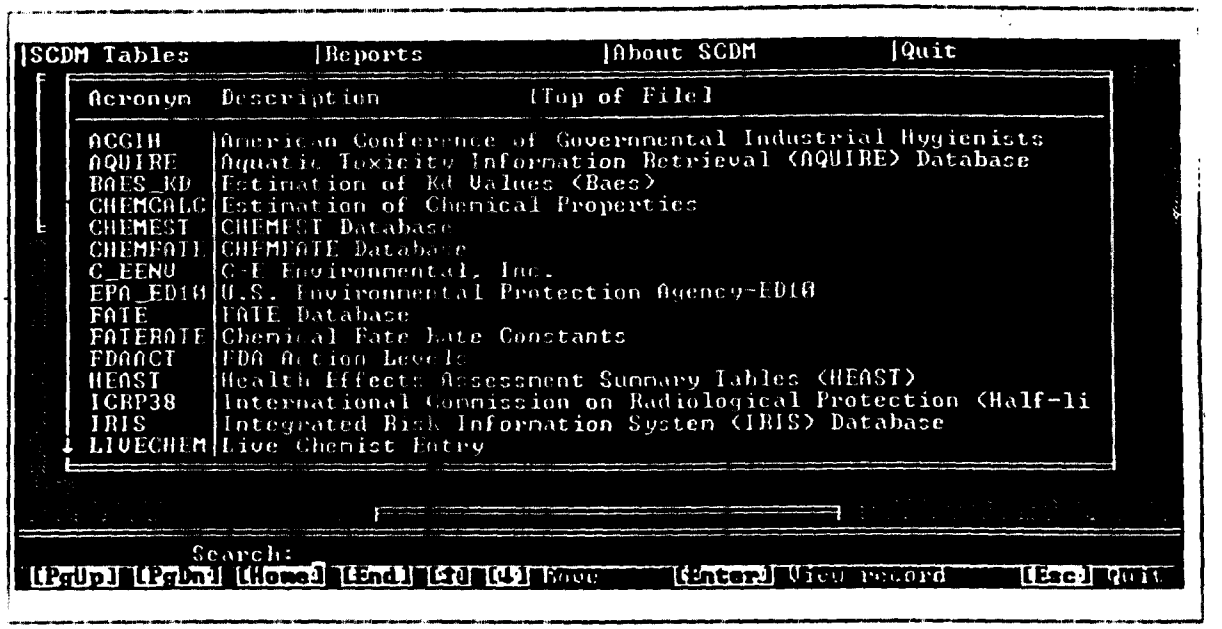

Figure 4. Scrolling pick-list.

2.3.3 SCDM Table Screens

Data contained in SCDM-DM can be viewed by selecting an option under the **SCDM Tables** menu. For example, the specific screen shown in Figure 5 can be displayed by choosing the **Chemical Table** option under the **SCDM Tables** menu. To choose a data record for viewing, select the **Find** option from the top of the screen. The desired data record can be selected for each SCDM table using the methods discussed in Sections 3.1 through 3.6. A **Quit** option is also available that will return the user to the **SCDM Tables** menu.

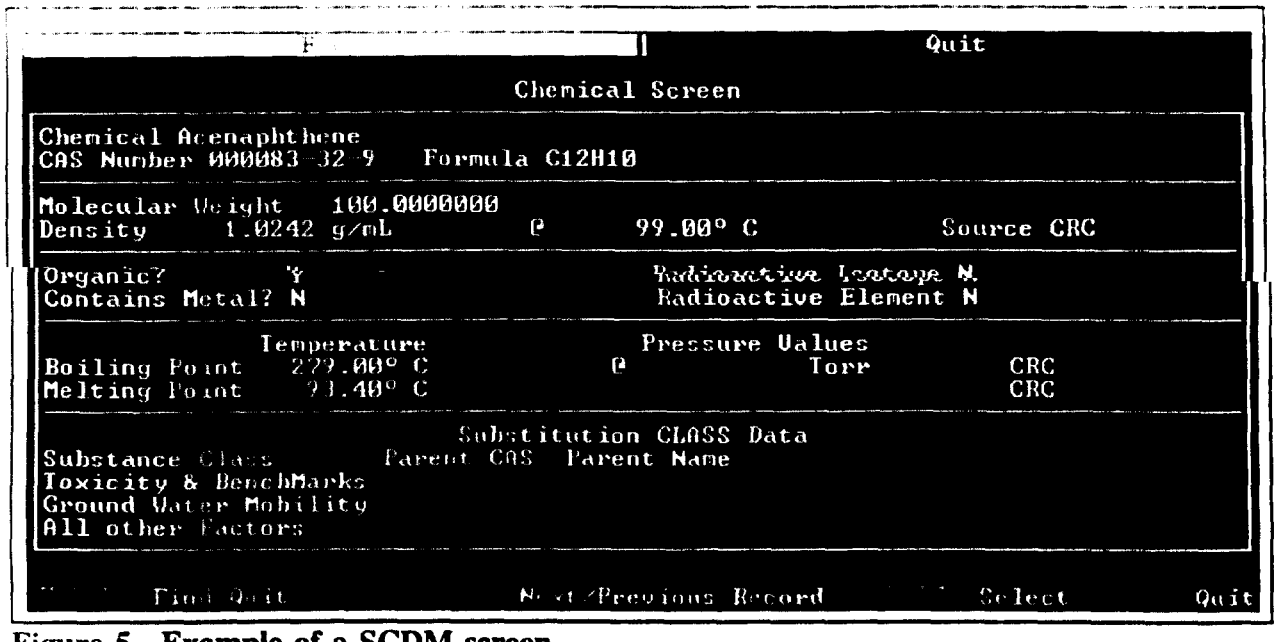

Figure 5. Example of a SCDM screen.

SECTION 3

SCDM TABLES

Section 3 is an overview of the various SCDM data tables. The discussion follows the order of the tables that appear on the **SCDM Tables** menu from the main screen.

3.1 SOURCE TABLES

Source tables contain chemical data for a variety of physical and chemical characteristics for each SCDM contaminant. Each source table lists values for a subset of all the data elements used by SCDM-DM to calculate the HRS factor values and benchmarks. A source table may not contain information for all chemicals contained in the SCDM database.

SCDM-DM uses 28 sources to calculate HRS factor values and benchmarks. Information from these sources can be viewed with the **Source Tables** option from the **SCDM Tables** menu. A scrolling pick-list will appear (see Figure 6). Choose the desired source table using the methods described in Section 2.3.2.

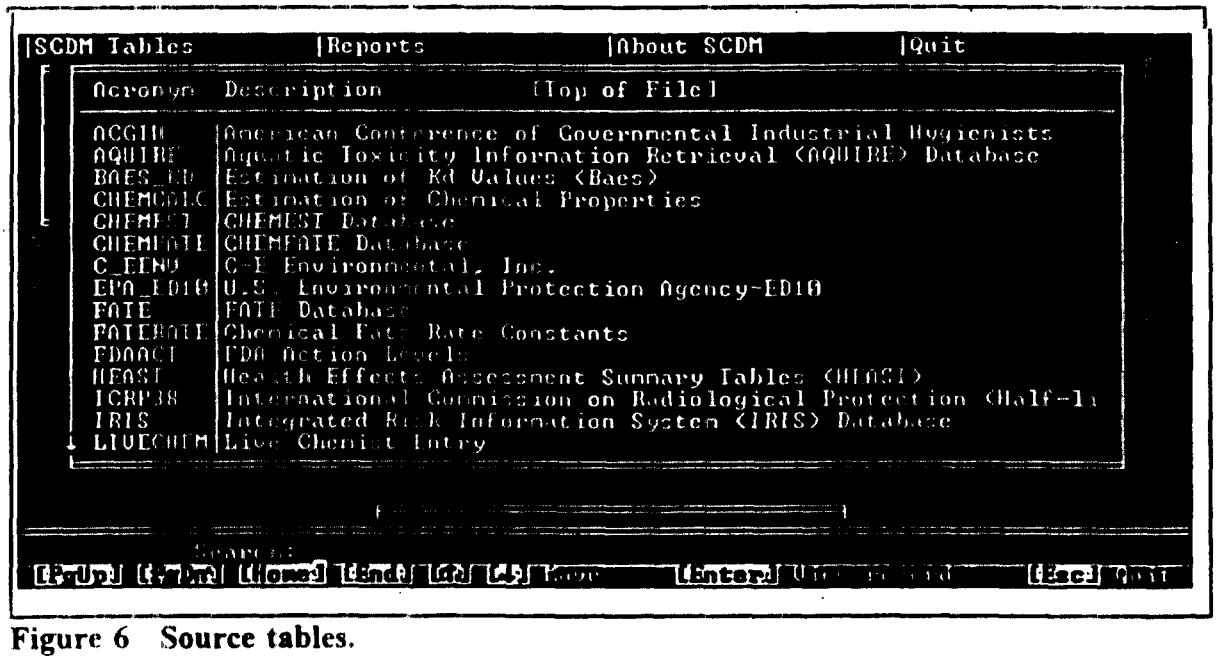

Figure 6 Source tables.

The chemicals contained in each source table can be indexed by name or by Chemical Abstracts Service (CAS) number. Selecting **Find** from the view screen reveals these index options.

Choose an option to display a chemical list indexed in the desired fashion. After a chemical is selected, the user is returned to the view screen (see Figure 7). Because each source contains varying pieces of information, each source table has a unique format.

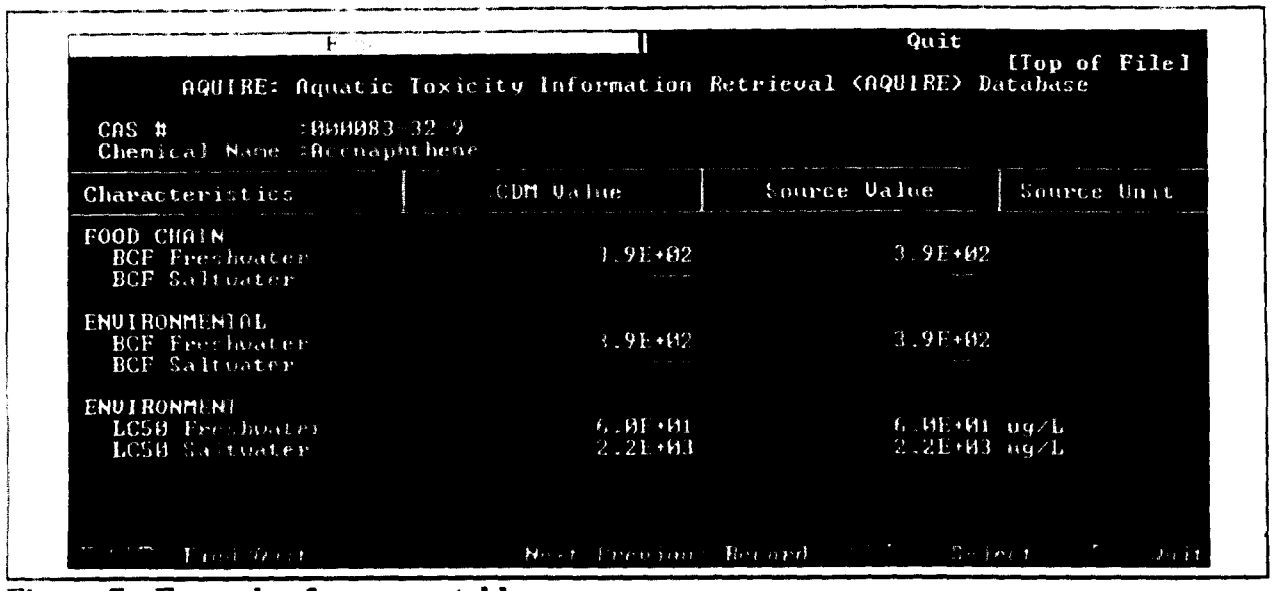

Figure 7. Example of a source table screen.

Subsequently, the screen shows data for the selected chemical. Reference values and corresponding units are displayed. The "SCDM value" represents the values used by SCDM (in standard units) for HRS factor value and benchmark calculations.

3.2 CHEMICAL TABLE

Selecting the **Chemical Table** option from the **SCDM Tables** menu displays the screen with chemical identity and physical properties for the first contaminant in the database (see Figure 8).

The following information is displayed for each chemical:

- **Chemical Name**--the name to be used in all SCDM reports and files. Hazardous substance synonyms are maintained in the Synonyms List.
- **CAS Number**--the 11-character CAS number, padded with leading zeroes if required.
- **Formula**--the molecular formula for the compound.
- **Molecular Weight**--the sum of the atomic weights of all atoms in the molecule

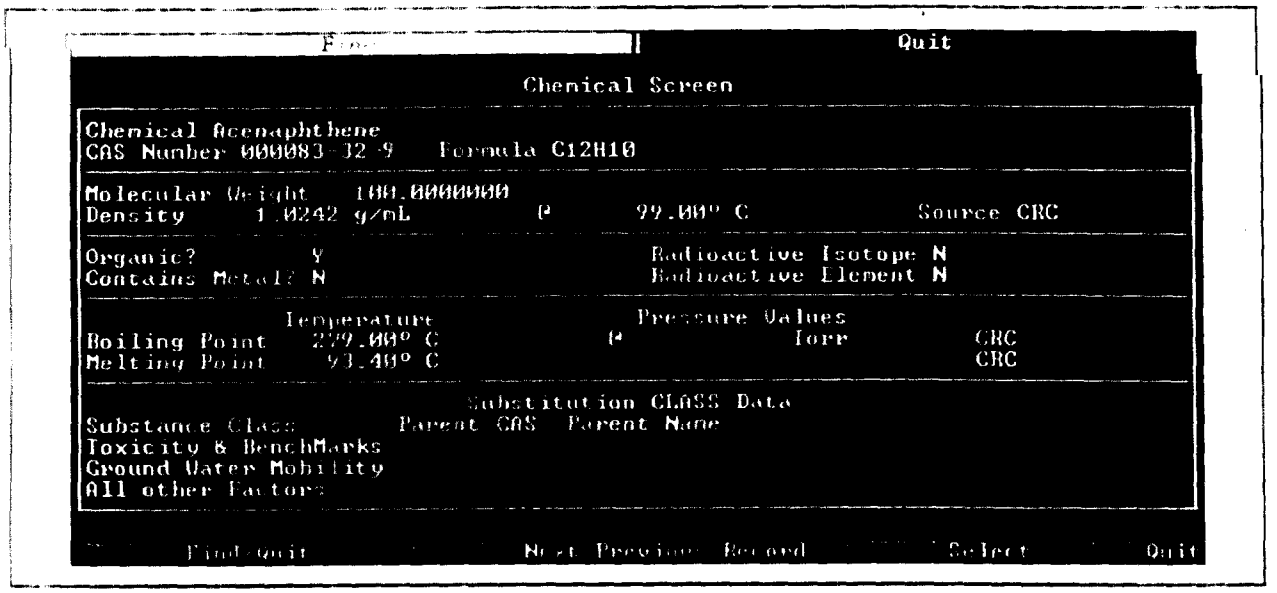

Figure 8. Chemical screen.

- **Density**--Five fields are associated with density. The first field is the mass per unit volume. The second field contains the corresponding units, preferably grams/milliliter. The third field contains the temperature at which the density was measured, and the fourth field contains the temperature scale used, preferably Celsius. The fifth field contains an acronym representing the source of the density information.

- **Organic Substance**--A "Y" is for an organic substance. An "N" is for an inorganic substance.

- **Metal Containing** -- A "Y" is for a metal or metalloid, or for a compound that contains a metal or metalloid. An "N" indicates that the substance is not, or does not contain, a metal or metalloid.

- **Radioactive Isotope**--A "Y" is displayed if the substance is a radioactive isotope, an "N" if it is not. A hazardous substance in SCDM cannot be both a radioactive element and a radioactive isotope.

  SCDM-DM contains data on both radioactive isotopes and radioactive elements. For example, uranium is a radioactive element, and uranium 233 is a radioactive isotope. SCDM-DM reports factor values and benchmarks for individual radioactive isotopes. Toxicity and persistence information are collected for each isotope. Ground water mobility, gas migration and mobility, and bioaccumulation potential for each isotope of a

radioactive element are derived from the chemical characteristics of the radioactive element.

- **Radioactive Element**--A "Y" is displayed if the substance is a radioactive element, an "N" if it is not.

- **Boiling Point**--Four fields are associated with boiling point, similar to the information for **Density**. The first field contains the boiling point value followed by the temperature scale used, preferably Celsius. The third field is the numerical value for the pressure at which the boiling point was measured, and the fourth field is the unit of pressure, preferably "Torr". The fifth field contains an acronym representing the reference used to obtain this information.

- **Melting Point**--Refer to **Boiling Point** discussion. Note that tests to determine the melting point are usually performed at the same pressure as the boiling point tests.

In addition, there may be entries in the following substitution class fields:

- **Toxicity and Benchmarks**--contains the CAS number and name of the parent chemical used to calculate the toxicity factor values and benchmark values

- **Ground water Mobility**--contains the CAS number and name of the parent chemical used to calculate ground water mobility factor values

- **All Other Factors**--contains the CAS number and name of the parent chemical used for half-life data, BCFs, and Log K_{ow}.

The last three fields are "chemical substitution classes" and contain several types of data. Certain groups of substances share these data. These groups of substances inherit one or more of their chemical substitution class data values from a common source, or "parent substance." Currently, only two groups of substances inherit data from a "parent substance": metal compounds and radioactive substances. For more details on the nature of "parent substances," refer to Section 2.2.8 of the *Superfund Chemical Data Matrix* report (EPA/540/R-96/028).

Selecting **Find** from the **Chemical Screen** displays two options for sorting the list of chemicals: by chemical name or by CAS number. Choosing an option will display a chemical list indexed in the chosen fashion. When a chemical is selected from the list, the information for the chemical is displayed on the screen.

3.3 UNITS CONVERSION TABLE

The Units Conversion Table contains information that instructs SCDM-DM on how to convert source table data to a usable SCDM form. For instance, LD_{50} dermal values from the Registry of Toxic Effects of Chemical Substances (RTECS) Source Table can be given in mL/mg, mg/kg, ppm, or mL/kg. The Units Conversion Table instructs SCDM-DM to convert all LD_{50} dermal values in the various source tables into units of mg/kg for consistency. A units conversion entry exists for each kind of unit conversion that is necessary for each source table (e.g., four unit conversion entries exist for the example: mL/kg to mg/kg, ppm to mg/kg).

Four fields constitute the Units Conversion Table (see Figure 9):

- **Acronym**--acronym for the source table
- **Data Element**--piece of data contained in the source table
- **Source Units**--the unit of the source table data element
- **SCDM Units**--the unit to which SCDM-DM converts the source unit.

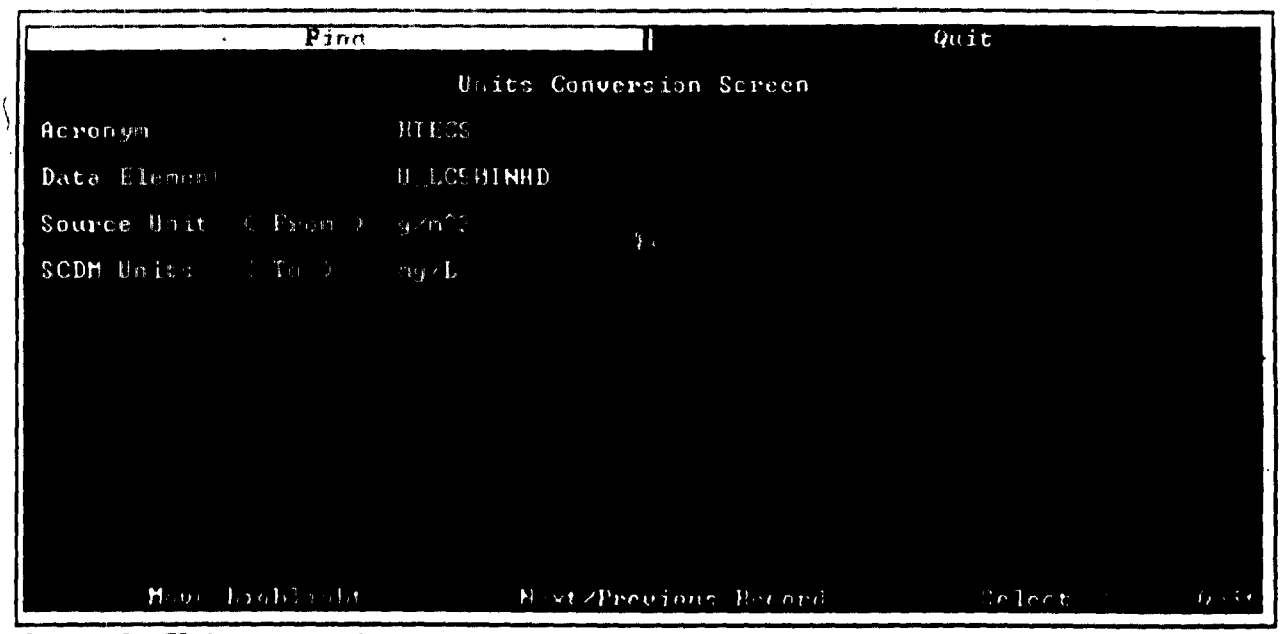

Figure 9. Units conversion screen.

To view the Units Conversion Table, select **Find** from the **Units Conversion Screen**. The list of unit conversion entries can be indexed by either **Acronym** or **Data Element**. Choosing either option displays a list of entries indexed in the desired fashion.

3.4 REFERENCE HIERARCHY

Each chemical in the SCDM database is associated with several data elements. Typically, a particular data element can be found in more than one source. SCDM-DM allows a maximum of five references to be used as possible sources of data for each data element. The acronyms of these sources are maintained in the SCDM Reference Hierarchy List. Each data element has an established hierarchy for data sources that ranks them in order of preference. When SCDM-DM assembles data from the sources, the hierarchy is scanned sequentially from highest rank to lowest rank. The highest-ranking reference source that contains data for a particular data element is selected, and the value in that reference is the value used in calculating factor and benchmark values. If the highest ranking source has a null value in a field, SCDM-DM selects the next source in the reference hierarchy until a valid source is identified. It is important to remember that when zero is entered into a field, it is considered a valid value, not a null value.

The hierarchy for a particular data element can be viewed by selecting the **Hierarchy Table** option from the **SCDM Tables** menu. If the **Find** option is chosen, an alphabetical listing of SCDM data elements is displayed. Selecting a data element from this list displays the information for the selected data element (see Figure 10). This screen lists the references for the selected data element in the order established by the SCDM hierarchy.

Figure 10. Hierarchy screen.

The following fields constitute the Hierarchy Screen:

- **Description**--data element description
- **Element Name**--data element acronym
- **Method**--method of hierarchy. Currently the method for all data elements is sequential (i.e., 1st, 2nd, etc...)
- **Reference**--source table that the data element references.

The **Hierarchy Screen** contains fields for up to five references for each data element.

3.5 REFERENCE TABLE

The Reference Table contains bibliographic references for each of the source tables. This table can be accessed by selecting the **Reference Table** option from the **SCDM Tables** menu. Data pertaining to references are used to maintain a bibliography of the information sources used to create the SCDM reports.

The following fields constitute the Reference Table:

- **Ref ID**--an acronym for the reference and is used to identify the source of information in the SCDM database
- **Ref Name**--the description of the reference ID
- **Author**--the author of the reference
- **Publisher**--the name of the publisher of the reference
- **Pub Date**--the date that the reference was published
- **Pub Loc.**--the city (and possibly the state) of publication
- **Title**--the complete title of the reference.

To view a source table reference, first select **Find** from the **Reference Table** screen. This will display a scrolling pick-list from which to select the reference (see Figure 11). When a reference is selected from the list, the user is returned to the view screen and the information for the selected reference is displayed.

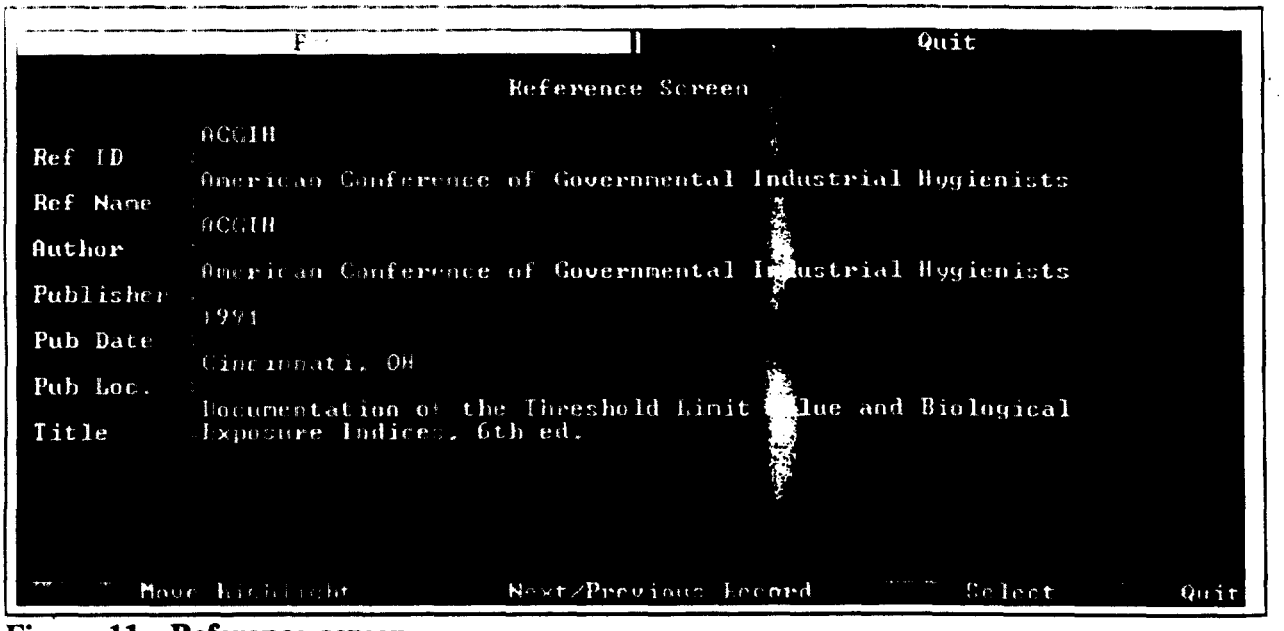

Figure 11. Reference screen.

3.6 SYNONYM TABLE

Selecting **Synonym Table** from the **SCDM Tables** menu displays a screen from which the user can view synonyms for chemicals located in the chemical table. A list of these synonyms is required to accompany the tables of factor values and benchmarks so that chemical names reported at sites can be cross-referenced to the chemical names used in SCDM. These synonyms are not used for any other purpose. In SCDM, a hazardous substance can have any number of synonyms, but **only one** of the synonyms can be designated as the "preferred synonym" because PREscore is capable of accommodating only one synonym.

The following fields constitute the synonym table:

- **CAS Number**--the 11-character Chemical Abstracts Service number, padded with leading zeroes, if required
- **Synonym Name**--the name of the chemical
- **SCDM Chemical Name**--the chemical name to which the synonym refers
- **PREscore Preferred Synonym**--a "Y" in this field indicates that the synonym is the preferred synonym; "N" indicates that the synonym is not the preferred synonym. One synonym is designated as the preferred synonym for each chemical.

Selecting **Find** from the **Synonym Table** screen displays two options to index synonyms: by chemical name or by CAS Number. Choosing either option displays a list of synonyms indexed in the chosen fashion. When a synonym is selected from the list, the user is returned to the view screen and the chosen synonym's information is displayed.

SECTION 4

GENERATING SCDM REPORTS

The **Reports** menu on the main screen contains the following four choices: **Appendix A--Page Report**, **Appendix B--HRS Table**, **Source Tables**, and **Other Tables**. Various reports can be printed or saved to a file on disk as described below.

After a report has been selected, a box containing report options is revealed (see Figure 12). The first two lines of the box refer to the dates of the current and previous versions of the SCDM database. The dates contained in these fields are used in the header and footer of the report.

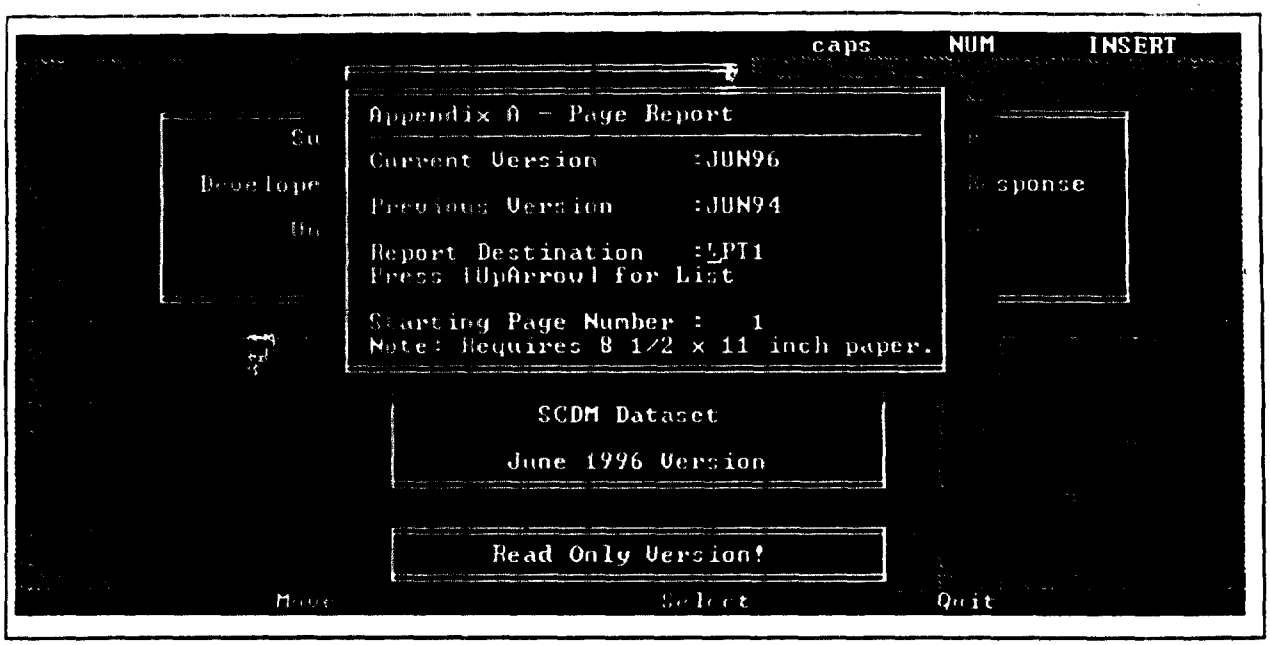

Figure 12. Generate report option box.

The report can be sent to either the serial or parallel port for printing or can be written to a file. To reveal a list of report destinations, press the space bar and then the <↑> key while the Report Designation field is highlighted. The starting page number can also be specified. Pressing <Esc> aborts the report generation process.

4.1 APPENDIX A--CHEMICAL DATA, FACTOR VALUES, AND BENCHMARKS FOR CHEMICAL SUBSTANCES

The report generated with this option constitutes Appendix A of EPA/540/R-96/028, *Superfund Chemical Data Matrix*, and defaults to the filename SCDMPAGE.RPT. Appendix A is a two-page report generated for each chemical containing benchmarks and references for all chemicals in SCDM.

Once **Appendix A--Page Report** is selected from the **Reports** menu, a scrolling pick-list of chemicals is displayed. A report can be generated for one chemical, a series of chemicals, or all chemicals from this list. To select only one chemical, highlight the desired chemical and press <Enter> twice. To select a range of chemicals, highlight the first chemical in the range, press <Enter>, highlight the last chemical in the range, and then press <Enter>. This will select all the chemicals between the two chosen chemicals, inclusive. To include all chemicals, select the first and last chemicals.

4.2 APPENDIX B--TABLES FOR NONRADIOACTIVE HAZARDOUS SUBSTANCES

Selecting **Appendix B--HRS Table** from the **Reports** menu provides six report options. These six reports, bound in consecutive order, represent Appendix B of EPA/540/R-96/028. Each report lists chemicals alphabetically. Table 1 lists the table titles and their default output filenames.

Table 1. Appendix B--HRS Table Options

Table Title	Report Default Output Filename
1. Factor Values	FACTORS.RPT
2. Benchmarks--Air/Ground Water	BNCH_AGW.RPT
3. Benchmarks--Surface Water	BNCH__SW.RPT
4. Benchmarks--Soil Exposure	BNCHSOIL.RPT
5. Radionuclide Factor Values	RADFACT.RPT
6. Radionuclide Benchmarks	BNCH_RAD.RPT

The user may change the filename; however, the ".RPT" extension cannot be altered. There are two identifiers in the Appendix B reports:

- "*" indicates a change in a specific factor value or benchmark between the current and previous SCDM databases
- "**" indicates that a new hazardous substance has been added to the current SCDM database.

The six report formats are explained in the following subsections.

4.2.1 Factor Values

The **Factor Values** report is a list of the HRS factor values for all nonradionuclide chemicals in SCDM. The report contains the SCDM chemical name and its CAS number as well as factor values for:

- Toxicity
- Ground water mobility for liquid-karst and liquid-nonkarst aquifers
- Ground water mobility for nonliquid-karst and nonliquid-nonkarst aquifers
- River and lake persistence
- Freshwater and saltwater human food chain bioaccumulation factor (BCF)
- Freshwater and saltwater environmental BCF
- Freshwater and saltwater ecotoxicity
- Gas migration
- Gas mobility.

In addition, each substance is identified as a gas, a particulate, or both. The report is alphabetical by SCDM chemical name.

4.2.2 Benchmarks--Air/Ground Water

The **Benchmarks--Air/Ground Water** report is a list of the air and ground water benchmark values for all chemicals in SCDM. The SCDM chemical name and its CAS number are listed. For the air pathway, the following benchmark values are included: National Ambient Air Quality Standards (NAAQS) or National Emissions Standards for Hazardous Air Pollutants (NESHAPS), reference dose screening concentrations, and cancer risk screening concentrations. For the ground water pathway, the following benchmark values are included: Maximum Contaminant Levels (MCLs), Maximum Contaminant Level Goals (MCLGs), reference dose screening concentrations, and cancer risk screening concentrations. The report is alphabetical by SCDM chemical name.

4.2.3 Benchmarks--Surface Water

The **Benchmarks--Surface Water** report is a list of the surface water benchmark values for all chemicals in SCDM. The values are listed for the following subpathways: drinking water, human food chain, and environmental. For the drinking water subpathway, the report contains the following benchmark values: MCL or MCLG, reference dose screening concentrations, and cancer risk screening concentrations. For the human food chain subpathway, the report contains the following benchmark values: Food and Drug Administration Action Levels, reference dose screening concentrations, and cancer risk screening concentrations. For environmental threat, the report contains the following benchmark values: freshwater and saltwater Ambient Water Quality Criteria (AWQC) and Ambient Aquatic Life Advisory Concentrations (AALAC). As of this writing, there are no AALAC values. The report is alphabetical by SCDM chemical name.

4.2.4 Benchmarks--Soil Exposure

The **Benchmarks--Soil Exposure** report is a list of the soil exposure benchmark values for all chemicals in SCDM. The report contains the following values: reference dose screening concentrations and cancer risk screening concentrations. The report is alphabetical by SCDM chemical name.

4.2.5 Radionuclide Factor Values

The **Radionuclide Factor Values** report is a list of the factor values for all radionuclides in SCDM. The SCDM chemical name and its CAS number are listed as well as factor values for:

- Toxicity
- Ground water mobility for liquid-karst and liquid-nonkarst aquifers
- Ground water mobility for nonliquid-karst and nonliquid-nonkarst aquifers
- River and lake persistence
- Freshwater and saltwater human food chain bioaccumulation factor (BCF)
- Freshwater and saltwater environmental BCF
- Freshwater and saltwater ecotoxicity
- Gas migration
- Gas mobility.

In addition, each substance is identified as a gas, a particulate, or both. The report is alphabetical by SCDM chemical name.

4.2.6 Radionuclide Benchmarks

The **Radionuclide Benchmarks** report lists the benchmark values for all radionuclides in SCDM. The following benchmark values are listed:

- Air cancer risk screening concentrations
- Ground water MCL and cancer risk screening concentrations
- Drinking water MCL and cancer risk screening concentrations
- Human food chain cancer risk screening concentrations
- Soil exposure Uranium Mill Tailings Radiation Control Act (UMTRCA) standards
- Cancer risk screening concentrations for ingestion
- Cancer risk screening concentrations for external exposure (gamma radiation).

As of this writing, there are no gamma radiation cancer risk screening concentrations in the UMTRCA standards or SCDM. The report is alphabetical by SCDM chemical name.

4.3 SOURCE TABLES

Choosing **Source Tables** displays a list of the various source tables that can be generated with this option. The default output filename for each report is the source table acronym followed by the extension ".RPT". Each source table report consists of an alphabetical listing of the chemicals contained in the table with their corresponding data element values.

4.4 OTHER TABLES

Other tables are available and are discussed in the following subsections. Table 2 lists the titles and default output filenames. The user can change the filenames but the ".RPT" extensions cannot be altered.

TABLE 2. Other Tables Options

Table Title	Report Default Output Filename
Chemical List --CAS Number --Chemical Name	CHEM_CAS.RPT CHEMNAME.RPT
Reference Hierarchy	HIERARCH.RPT
Reference List--Acronyms	REFACRO.RPT
Reference List--Bibliography	REFBIBLI.RPT
Synonyms List by Chemical Name	SYNONYM1.RPT
Synonyms List by Synonym Name	SYNONYM2.RPT
Units Table --Acronym --Data Element	UNITACRO.RPT UNITDATA.RPT
Data Class Parents and Members	CLASS.RPT
Compare Current and Previous Factors	COMPFACT.RPT

4.4.1 Chemical List

Two different lists are available under the **Chemical List** option: Chemical List by **CAS Number** or Chemical List by **Chemical Name**. The first displays CAS numbers followed by their associated chemical name, and the second displays an alphabetical listing of chemical names followed by their CAS number.

4.4.2 Reference Hierarchy

The **Reference Hierarchy** report is printed in two parts: "Reference Hierarchy by Data Element" and "Reference Hierarchy by Reference Name."

The first part of the report consists of an alphabetical list of data elements and their respective reference hierarchies. Each line of the report contains the following information: data element name, a brief description of the data element, and up to five source tables listed in their hierarchical order (e.g., "Ref 1" is the first source table, "Ref 2" is the second source table). This part of the report is used to determine the hierarchy when a particular data element is known.

The second part of the report consists of an alphabetical listing of source table acronyms. The data elements and description for each source table acronym are listed as well as the code used for each data element.

4.4.3 Reference List--Acronyms

The **Reference List--Acronyms** report is a list of all of the source tables used in SCDM. The report contains an alphabetical list of source table acronyms and the complete source table titles.

4.4.4 Reference List--Bibliography

The **Reference List--Bibliography** report is a list of the source tables used in SCDM. This report contains the following information: acronym, short title, title, publication date, publisher, and publication city. The report is alphabetical by source table acronym.

4.4.5 Synonyms List by Chemical Name

The **Synonyms List by Chemical Name** report is an alphabetical list of all chemicals used in SCDM and their corresponding synonym(s). The chemical names are in a column on the left and the corresponding synonyms are on the right. Synonyms designated as preferred are marked with an asterisk.

4.4.6 Synonyms List by Synonym Name

The **Synonyms List by Synonym Name** report is an alphabetical list of the chemical synonyms used in SCDM.

4.4.7 Units Table

Two separate reports can be generated with this option. The **Units Conversion Table by Acronym** report is an alphabetical list of all source table acronyms. The data elements and corresponding conversions made for each data element are listed for each source table. In the second report, **Units Conversion Table by Data Element**, data elements are listed alphabetically, followed by the sources and their corresponding source table and conversions.

4.4.8 Data Class Parents and Members

This report displays a numerical listing of "parent substances" (refer to Section 3.2) by CAS number. For each parent substance, an inventory of the substances that inherit class substitution values from the parent substance is included.

4.4.9 Compare Current and Previous Factors

The **Compare Current and Previous Factors** report compares the differences in the HRS factor values and benchmarks between the "previous" database and the "current" version containing the edits and modifications to the data. For each chemical, the report lists its CAS number, the data field acronym, a brief description of the data field, the old value (in the column labeled "Next"), and the current value (in the column labeled "Current"). One chemical and its associated data is printed per page. The report is alphabetical by SCDM chemical name.